Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-9 (cancelled)

Claim 10 (currently amended) A magnesium die casting system for in-line recycling of scrap magnesium, the system comprising a re-melt furnace in fluid communication with a casting furnace in fluid communication with a pump for supplying molten magnesium to a die casting machine that produces solid castings and solid scrap, the solid scrap re-introduced into the re-melt furnace, the re-melt furnace comprising a plurality of heating zones, ~~wherein~~ each heating zone ~~comprises~~ comprising a heat transfer material, and wherein a different heat transfer material is used in one or more zones.

Claim 11 (currently amended) The magnesium die casting system of claim 10, wherein each heating zone includes one or more heating elements and wherein the heating elements are located adjacent the heat transfer material.

Claim 12 (currently amended) A magnesium die casting system for in-line recycling of scrap magnesium, the system comprising a re-melt furnace in fluid communication with a casting furnace in fluid communication with a pump for supplying molten magnesium to a die casting machine that produces solid castings and solid scrap, the solid scrap re-introduced into the re-melt furnace, ~~wherein~~ the re-melt furnace ~~has~~ comprising a plurality of temperature sensors located at a plurality of positions within the furnace.

Claim 13 (original) The magnesium die casting system of claim 12, wherein the temperature sensors are located within different regions within the re-melt furnace.

Claims 14-20 (cancelled)

Claim 21 (new) A magnesium die casting system that includes in-line recycling of scrap magnesium, the system comprising:

a) a re-melt furnace, the re-melt furnace comprising a crucible containing molten magnesium stratified into three regions: an upper region; a lower region; and, a clean region between the upper and lower regions;

b) a casting furnace in fluid communication with the re-melt furnace by siphoning through a U-shaped tube having an inlet located within the clean region and an outlet located within the casting furnace;

c) a die casting machine comprising a shot sleeve and a die, the die casting machine for producing solid magnesium die castings and solid magnesium scrap;

d) a pump located within the casting furnace for supplying molten magnesium directly to the shot sleeve of the die casting machine through a filling tube connected to the shot sleeve; and,

e) means for re-introducing the solid magnesium scrap into the re-melt furnace.

Claim 22 (new) The magnesium die casting system of claim 21, wherein the ratio of scrap material to virgin material in the furnace is from 15% to 45%.

Claim 23 (new) The magnesium die casting system of claim 21, wherein the magnesium die casting system comprises means for monitoring purity of the molten magnesium in the middle zone.

Claim 24 (new) The magnesium die casting system of claim 21, wherein the magnesium die casting system comprises means for continuously monitoring purity of the molten magnesium in the middle zone.

Claim 25 (new) The magnesium die casting system of claim 21, wherein the crucible is shaped to promote stratification of the molten magnesium into the at least three regions.

Claim 26 (new) The magnesium die casting system of claim 21, wherein the re-melt furnace includes a plurality of heating zones that may be independently controlled.

Claim 27 (new) The magnesium die casting system of claim 26, wherein each heating zone includes one or more heating elements that may be used to deliver different amounts of heat in each heating zone.

Claim 28 (new) The magnesium die casting system of claim 21, wherein the U-shaped tube comprises a filter for excluding impurities and/or sludge from the casting furnace.

Claim 29 (new) The magnesium die casting system of claim 21, wherein the crucible includes one or more baffles.

Claim 30 (new) The magnesium die casting system of claim 29, wherein the baffle or baffles is/are removable.

Claim 31 (new) The magnesium die casting system of claim 21, wherein the means for re-introducing the scrap magnesium into the re-melt furnace substantially prevents the ingress of air into the re-melt furnace.

Claim 32 (new) The magnesium die casting system of claim 21, wherein the means for re-introducing the scrap magnesium comprises an air-lock.

Claim 33 (new) The magnesium die casting system of claim 21, wherein the re-melt furnace includes means for withdrawal of impurities from the upper and lower regions.

Claim 34 (new) The magnesium die casting system of claim 21, wherein the re-melt furnace includes means for re-introduction of alloy constituents.

Claim 35 (new) The magnesium die casting system of claim 21, wherein the re-melt furnace comprises a temperature sensor located within each region of the re-melt furnace.

Claim 36 (new) The magnesium die casting system of claim 21, wherein the re-melt furnace does not use flux.